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EXAMINER	
CHAN, RICHARD	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/725,767	ISMAIL, ALY M.	
	Examiner	Art Unit	
	Richard Chan	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-16 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-16, and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-5, 7-16, and 18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomez (US 2004/0235445A1) in view of Vorenkamp (US 6,285,865).

With respect to claim 1, Gomez discloses in Fig.3 a method for filtering a received signal in a wireless receiver, comprising: providing a received signal to a filter chain 306a and 308a located between a downconveter 302a and a demodulator (not shown), the filter chain comprising an input at input of 306a, a variable gain amplifier 308a and an output at output of 308a; and wherein the filter chain 311 arranged such that a feedback loop is located between an output of the variable gain amplifier 308a and output of the filter chain (306a and 308a), however the Gomez reference does not specifically disclose wherein the method for filter the received signal includes inverting

the impedance of the received signal in the filter chain using an active circuit to simulate inductance applied at the output of the amplifier.

The Gomez reference however does disclose inverting the impedance of the received signal using an inductance L406a applied at the output of an amplifier 301 before the down conversion step that occurs at mixer 302a.

It would have been obvious to one of ordinary skill in the art to implement the inverting impedance of the received signal at the output of the downconverter instead of the before the downconverter in order to invert the impedance of either the I or Q signal that will be demodulated.

The Vorenkamp reference discloses wherein a gyrator circuit is implemented to replace of Inductor capacitor circuits. Fig.52 (Col.56 line 45- Col.57 line 9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the active gyrator circuit used to create an inductance as disclosed by the Vorenkamp in order to eliminate the use of inductors and can easily be integrated onto a CMOS substrate to the method of filtering a received signal in a wireless signal of Gomez.

With respect to claim 5, Gomez discloses a low noise filter for a wireless receiver, comprising: an amplifier 301; and an impedance inverter 311 at the output of the amplifier 301 and configured to transform inductance L701a applied to a received signal to a capacitance, the impedance inverter having a feedback loop (output of transistors m707a to capacitor C710a) located between an output of the amplifier 301

and an output of the low noise filter 730, however does not specifically disclose wherein an active circuit simulates an inductance at the output of the amplifier.

The Vorenkamp reference discloses wherein a gyrator circuit is implemented to replace of Inductor capacitor circuits. Fig.52 (Col.56 line 45- Col.57 line 9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the active gyrator circuit used to create an inductance as disclosed by the Vorenkamp in order to eliminate the use of inductors and can easily be integrated onto a CMOS substrate to the method of filtering a received signal in a wireless signal of Gomez.

With respect to claim 9, Gomez discloses a direct conversion receiver having a filter chain including: an amplifier 301, a filter 730 and an impedance inverter configured to transform inductance applied to a received signal to a capacitance, the impedance inverter having a feedback loop located between an output of the amplifier and an output of the filter, however does not specifically disclose wherein an active circuit simulates an inductance at the output of the amplifier.

The Vorenkamp reference discloses wherein a gyrator circuit is implemented to replace of Inductor capacitor circuits. Fig.52 (Col.56 line 45- Col.57 line 9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the active gyrator circuit used to create an inductance as disclosed by the Vorenkamp in order to eliminate the use of inductors and can easily be

integrated onto a CMOS substrate to the method of filtering a received signal in a wireless signal of Gomez.

With respect to claim 10, Gomez and Vorenkamp combined discloses the portable transceiver of claim 9, Gomez continues to disclose in Fig.4 wherein the impedance inverter further comprises an inductor L406a coupled to the output to the amplifier 201.

4. Claims 2-4 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomez (US 2004/0235445A1) in view of Vorenkamp (US 6,285,865) and in further view of Moulding (US 4,290,036).

With respect to claim 2, Gomez and Vorenkamp combined discloses the method of claim 1, however Gomez does not specifically disclose wherein inverting the impedance of the received signal at the output of the amplifier comprises using a voltage controlled source to transform the inductance applied to the received signal to a capacitance.

The Moulding reference however discloses wherein inverting the impedance of the received signal at the output of the amplifier comprises using a voltage controlled source to transform the inductance applied to the received signal to a capacitance. (Col.2 line 28-57)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a voltage-controlled source to transform inductance to the received signal as disclosed by Moulding to the method of filtering as disclosed by Gomez and Vorenkamp in order to compensate for the resistance components.

With respect to claim 3, Gomez, Vorenkamp, and Moulding combined disclose the method of claim 2, Moulding continues to disclose the method further comprising implementing the voltage controlled current source as a pair of transconductance amplifiers 15 and 16.

With respect to claim 4, Gomez, Vorenkamp, and Moulding combined disclose the method of claim 3, Gomez continues to disclose the method further comprising inserting a capacitance C405a at the output of a filter chain. 430

With respect to claim 11, Gomez and Vorenkamp combined disclose the portable transceiver of claim 10, however neither reference specifically disclose wherein the impedance inverter further comprises: a pair of transconductance amplifiers; and at least one capacitance coupled to the output of one of the amplifiers.

The Moulding reference however discloses wherein impedance inverter further comprises: a pair of transconductance amplifiers; and at least one capacitance coupled to the output of one of the amplifiers. (Col.6 line 37-61)

It would have been obvious to one of ordinary skill in the art to implement a pair of transconductance amplifiers and a capacitance coupled to the output as disclosed by Moulding to the portable transceiver of Gomez and Vorenkamp combined in order control the gain of the output signal of the transceiver.

With respect to claim 12, Gomez, Vorenkamp, and Moulding combined disclose the portable transceiver of claim 11, wherein the impedance inverter removes direct current (DC) offset present at the input of the amplifier. (Col.6 line 32 – Col.7 line 19)

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomez (US 2004/0235445A1) in view of Vorenkamp (US 6,285,865) and in further view of Long (US 6,026,286).

With respect to claim 7, Gomez discloses the low noise filter of claim 5, however Gomez does not specifically disclose wherein the impedance inverter further comprises: a pair of transconductance amplifiers, and at least one capacitance coupled to the output of one of the transconductance amplifiers.

The Long reference however discloses wherein the invention comprises inductors 550 and 552 coupled to the output of the amplifier in order to perform impedance matching within the RF ICE. (Col.6 line 47-57) and (Col.7 line 1-53)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the inductors to the output of the low noise amplifier as disclosed by Long in order to provide an impedance matching technique disclose to the low noise amplifier as disclosed by Gomez.

With respect to claim 8, Gomez and Long combined disclose the low noise filter chain of claim 7, Long continues to disclose wherein the impedance inverter removes direct current (DC) offset present at the input of the amplifier. (Col.6 line 32-Col.7 line 19)

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moffat (US 6,906,584) in view of Gomez (US 2004/0235445A1) and in view of Vorenkamp (US 6,285,865).

With respect to claim 13, Moffat discloses a portable transceiver, comprising: means for modulating a data signal; means for up converting 148 the modulated data signal and provide a radio frequency signal; means for transmitting 102 the RF signal; means for converting 146 a received signal to a baseband signal; means for amplifying 10 the baseband signal; however Moffat does not specifically disclose wherein and means for inverting the impedance of the received signal at the output of the amplifying means to transform inductance applied to a received signal to a capacitance, the means for inverting the impedance having a feedback loop that bypasses the amplifying

means, the means for inverting including an active circuit that simulates an inductance at the output at the output of the means for amplifying.

The Gomez reference discloses wherein means for inverting the impedance 311 of the received signal at the output of the amplifying means 308a to transform inductance L406a applied to a received signal to a capacitance C402a, the means for inverting the impedance 311 having a feedback loop located between an output of the amplifier 308a and output of the filter chain (306a and 308a) that bypasses the amplifying means.

It would have been obvious to one of ordinary skill in the art to implement the filter chain and impedance inverter as disclosed by Gomez with the portable transceiver as disclosed by Moffat in order invert the impedance on the output signal of the amplifier.

The Vorenkamp reference discloses wherein a gyrator circuit is implemented to replace the Inductor capacitor circuits. Fig.52 (Col.56 line 45- Col.57 line 9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the active gyrator circuit used to create an inductance as disclosed by the Vorenkamp in order to eliminate the use of inductors and can easily be integrated onto a CMOS substrate to the method of filtering a received signal in a wireless signal of Gomez and Moffat.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moffat (US 6,906,584) in view of Gomez (US 2004/0235445A1) in view of Vorenkamp (US 6,285,865) and in further view Moulding (US 4,290,036).

With respect to claim 14, Moffat, Gomez, and Vorenkamp combined disclose the portable transceiver of claim 13, however neither reference combined further comprising voltage controlled current source means for inverting the impedance of the received signal at the output of the amplifier to transform the inductance applied to the received signal to a capacitance.

The Moulding reference however discloses wherein the transceiver comprising voltage controlled current source means for inverting the impedance of the received signal at the output of the amplifier to transform the inductance applied to the received signal to a capacitance. (Col.2 line 28-57)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the voltage controlled current source for inverting the impedance of the received signal as disclosed by Moulding with the portable transceiver as disclosed by Moffat, Gomez, and Vorenkamp combined in order to control the impedance inverter by current source means.

8. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helegson et al (US 6,184,747) in view of Vorenkamp (US 6,285,865).

With respect to claim 15, Helegson Fig.2 discloses a system for removing direct current offset from a received signal, comprising: an amplifier BUF A configured to amplify a received radio frequency signal to generate an amplified RF signal; and a gyrator 306I and 306Q generated inductance applied at the output of the variable gain amplifier BUF A, the gyrator 306I and 306Q generated inductance configured to transform inductance present at the output of the amplifier to a capacitance, the gyrator generated inductance and the amplifier arranged such that the amplified RF signal is not applied at an input of the amplifier. (Col.7 line 20-33)

The Helegson reference does not specifically disclose wherein the amplifier is a variable gain amplifier, wherein the gyrator-generated inductance shunts excess DC current present at the output of the variable gain amplifier to ground, however it would be inherent to implement a variable gain amplifier in place of the amplifier as disclosed by Helegson in order to control the gain of the incoming RF signal.

The Vorenkamp reference discloses wherein a gyrator circuit is implemented to replace the Inductor capacitor circuits. Fig.52 (Col.56 line 45- Col.57 line 9)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the active gyrator circuit used to create an inductance as disclosed by the Vorenkamp in order to eliminate the use of inductors and can easily be integrated onto a CMOS substrate to the method of filtering a received signal in a wireless signal of Helegson.

With respect to claim 16, Helegson and Vorenkamp combined discloses the system of claim 15, wherein the gyrator-generated inductance adds a filter pole that is not a function of the transconductance of the variable gain. (Col.6 line 65-Col.7 line 11)

With respect to claim 17, Helegson and Vorenkamp combined disclose the system of claim 15, wherein the gyrator-generated inductance shunts excess DC current present at the output of the variable gain amplifier. (Col.8 line 8-17)

With respect to claim 18, Helegson and Vorenkamp combined discloses the system of claim 15, wherein at a frequency above a high pass cutoff frequency, the gyrator generated inductance appears as a high impedance at the output of the variable gain amplifier. (Col.8 line 43-51)

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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8/10/07

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